COPYRIGHT NOTICE

Virtual teams: Worlds apart

Ian Knox and Deirdre Wilmott
Institute for Professional and Organisational Learning
University of Ballarat

Virtual teams are a relatively new phenomenon. A number of studies have focused on the description of team development and the group process of virtual learning teams as they form. This paper is a study of how Australian and American undergraduates worked together in virtual teams to respond to ethical and business practice problems for a given scenario. The study specifically examined the communication methods, task completion methodology and cultural differences exhibited by two undergraduate classes from the University of Ballarat, Ballarat Australia and Jacksonville State University, Jacksonville, Alabama, United States. Both synchronous and asynchronous communications methods were used with differing levels of enthusiasm and acceptance. Although the study was based on a small sample, which limits its generalisability, there are implications to inform those who are considering similar methods in their teaching.

Introduction

In recent years the emergence of a plethora of Web 2.0 applications has allowed the choice of communications methods both synchronous and asynchronous, available for use to expand well beyond those studied previously. Dohn (2007) discusses how existing technologies, with which students and teachers are already familiar, can be used in new, Web 2.0-related ways. This project demonstrates this by using a variety of the current communication tools available to allow students to work in cross cultural teams in a virtual environment. The use of computer-mediated communication systems (CMCS) to support coursework is increasing, both as a means for students to prepare for using CMCS in their careers and as a mechanism for delivering distance education. Studies such as Wilson (2000) have linked individual characteristics to the use of CMCS which was also reflected in this study, particularly cultural differences and approach to task completion.

Virtual teams are a relatively new phenomenon. There have been numerous studies that have focused on the description of team development and the group process of virtual learning teams as they form, establish roles and group norms, and address conflict. Coppola, Hiltz and Rotter (2004) and Ocker and Yaverbaum, (2004) have examined the performance of virtual teams and considered the importance of communication and relationship building. Jarvenpaa and Leidner (1999) define virtual teams as temporary, culturally diverse, geographically dispersed, electronically communicating workgroups. Successful virtual team facilitators must be able to manage the whole spectrum of communication strategies via new technologies, as well as human and social processes, and often do it across cultures. Eight teams were allocated the task of working together to complete a case study. The teams were made up of one American student and two Australian students per team. The Australian cohort also included one international student from each of the Netherlands, China, Vietnam, Nepal and India. Students were instructed to introduce themselves initially using video conferencing technology. They were advised to use Skype, Tokbox,, Wiziq, Dim Dim or any other video tools. The group members in each country chose Tokbox for initial contact, as they found it easier to coordinate other members of the team using asynchronous communication. Teams had roughly 14 collaboration days available to complete the project. The teams were expected to attempt the use of a wide array of collaboration tools, and student assessment was evaluated on the breadth and the depth of communication events.

Method

This pilot project used a case study approach to examine interactivity in virtual teams. This study examined the communication methods used, task completion methodology and cultural differences exhibited by virtual teams assigned from two undergraduate classes, one from Australia and one from the United States.

The project

The project was designed to allow the students from Jacksonville State University, Alabama, USA and the University of Ballarat, Victoria, Australia to work together in virtual teams, using a variety of communications methods to complete a case study responding to ethical and business practice questions. The American students were enrolled in a virtual enterprise course and had specifically studied communication technologies, whilst the Australian students had not had completed various eBusiness courses. Individual assessment was based on student documentation of the process, and weighted to a lesser extent on the exercise answers.

Communications channels and interaction

In all cases the American students were the first to initiate contact. Within 24 hours all had sent an introductory video email to their Australian team members which immediately caused minor dissent relating to expected response times. The Americans' videos were between five and ten minutes in length, which caused some downloading problems because of bandwidth issues for some of the Australian students. Another issue was that the University of Ballarat has no web cameras or Skype available in computer laboratories so students needed to make their own arrangements. This was achieved by sharing staff or individual students' hardware. The Australian team members had sent reciprocal video emails within 72 hours, although the responses still caused some consternation from some of the American counterparts (because of perceived poor response times). Cultural differences were more significant than students initially expected. Examples included American students were more formal, and much more comfortable with synchronous video and audio communications. Australian students were more comfortable with text based asynchronous communications, but were less formal. For example the older American students expected deference from younger Australian students, which often did not happen. In addition to the hardware shortfall and slower internet services available to the Australian students there was also much less enthusiasm by the Australians for video emails. They enjoyed and considered the introductory emails useful but reported subsequent video emails to be less valuable and in some cases tedious. A number of groups used Skype and one group successfully tried Tokbox video conferencing during what was reported to be a 'late night Tokbox' party. The Australian students did all report that time zone and technology differences made synchronous communications difficult. Although some American students expressed a desire to persist with synchronous communication, the Australians chose to mainly use asynchronous methods, such as email, wiki pages and Facebook threads. An evident contradiction to this was the use of instant messaging (IM), mainly MSN and Gmail chat by Australian and American members of one group that had established a social relationship beyond the needs of the task.

By day five of the exercise all groups had established wiki pages to collaborate on answering the scenario questions. Most groups allocated questions to be answered by mutual agreement whilst in a couple of groups individuals assumed leadership roles (in one case by stealth rather than consensus) and assigned the questions. The choice of wiki host demonstrated familiarity rather than fundamental differences of opinion as the Australians wanted to use Pbwiki (that they were familiar with) and the Americans wanted to use Wetpaint (that they were familiar with). Rollet *et.al.* (2007) suggests overall, the Web 2.0 approach leads to higher levels of interaction. After day five some groups then used wiki pages exclusively to communicate and complete their case studies, while others used a combination of wiki posts, Google applications, Zoho meetings and emails. Facebook threads were popular with some of the younger students while the mature age students tended to favour emails and direct posts to wikis. For reporting purposes all groups were expected to use a personal and group wiki. The approach to task completion also varied between the two groups. The Australians were happy to allocate questions for individual completion, whereas the American students wanted a more collaborative approach. Although students were told assessment would largely focus on the documentation of the communications process the American students were more fixated on task completion and neglected the process documentation.

Student reflection

Both the Australian and American students generally reported favorably on the project outcome although. in one case an individual (American) team member became quite distressed and hostile, because of slow response times from Australian team members. One Australian student stated that communication would be continued with his American counterpart because a personal relationship had been developed; however most indicated that contact would not be continued beyond the project conclusion. It was evident from reading student reports that the American students put more store on in depth analysis of the case study

questions although this had not been given priority either in the briefing notes or in the task assessment weightings (which were based on varied communications technology use and reflection. Student comments were generally positive about the project, while a variety of perspectives were expressed:

> This project has been a tremendous success. Although synchronous communication was not used, our teams has met and surpassed any and all problems encountered throughout this process. This has given me an in depth realization of the problems and confusion that international communication can present.
>
> It is of my opinion that Tokbox messages worked well to establish an overall atmosphere to relay the importance of this project to my teammates.
>
> Unfortunately, one of the most powerful forms of communication being Tokbox was not, in my opinion, used to it's fullest capabilities. This was mainly due to the limited access for the Australian students to the video technology. Richard's Tokbox entries personalised the task greatly and 'put a face to the name' so to speak. It's unfortunate that I could not provide him with a similar post.
>
> Facebook was not used, however, a great deal of personal information was provided through Facebook that helped in the personification of my teammates.
>
> The ability to see Matthew via video emails I believe did aid the process, from a pure logic being able to picture someone aid the memory of information. The program we used to communicate by video was the Tokbox application, however I found that some of our class members had difficulties using the application, the sheer embarrassment and nerves being one of them. Unfortunately access to fast internet was a problem along with the physical equipment required, this limited myself to use the Tokbox application.
>
> Personally the project occurred during a very busy time for me and communicating synchronously would have been very difficult. However I believe that asynchronous communication works just as well provided that information is shared.
>
> I found that using Facebook was really helpful to communicate, mostly because we check this more often than email and it is less formal.
>
> I found using the wiki page really helped our group to get all the answers down in the one place. In this respect wiki's are great for people to collate different pieces and put them into one format. Also, it is good to see when they were edited and by whom. Using a wiki page really cut back on the one way feel of email, which can be tedious at times. All in all, I think that the collaboration went well, and was fairly straightforward with the collaboration devices that we opted to use.
>
> Communication was strictly Async via e-mails and Facebook. E-mail seemed most effective but my teammates checked their Facebook more often so I got a faster response.

The teams that delegated tasks clearly expressed the highest levels of satisfaction with the exercise. This concurs with the findings of which indicate that the most satisfied team members were in virtual teams with effective coordination and communication.

Implications for practice

Of particular interest in this study was the overwhelming preference by students for the use of asynchronous communication methods over synchronous, although this was not without exception. MSN, and Skype were used by several groups, but interestingly on all occasions the dialog was mainly social, rather than task related. The comment by one of the students quoted above that 'teammates checked Facebook more often so I got a quicker response' demonstrates an interesting blurring between work and play. The Tokbox video emails were popular for introductions, but the Australian students (in particular) tired of them in favour of text based communications because 'they took too long to get to the point and to download'.

The most popular methods of communication were the group wiki pages, Facebook threads, and email. A number of students, both Australian and American expressed concerns about emails sounding 'too bossy' and they took extra measures to sound polite such as 'we hope this doesn't sound too bossy but we thought….'. It is likely that the use of synchronous communications would help with relationship building, but the students (particularly the Australians) found that time differences were a larger disincentive than initially anticipated. The perception that videoconference technology did not add value over existing communication tools is in line with a Hewlett-Packard study by Hirsh, Sellen and Brokopp (2005) which found that only 3% of 4532 HP staff surveyed were frequent users of video conferencing. Kreijnsa, Kirschner and Jochems (2003)say that communication and collaboration through virtual teams can fail because participants do not take advantage of the opportunities for social connection and it should not be presumed they will. In future research it would be desirable to allow for cultural and technological differences in the project design and to address the expectations of social connections in implementation.

Conclusion

This preliminary study provided an exciting insight into the potential of virtual teams. Some cultural and ICT readiness differences were noted between the students from U.S.A and Australia but a cooperative and effective working relationship was achieved by all groups. Both cohorts expressed a preference for asynchronous methods although the American students were more comfortable with synchronous communications than the Australians probably because they had used them more extensively. This study allowed students to choose their preferred communications methods (with the exception of the introductory video). Synchronous communications methods are often seen as desirable, and institutions continue to commit resources to virtual classrooms and other synchronous technology solutions. A useful extension to this preliminary study would be to allocate students to synchronous and asynchronous teams, and to evaluate the respective group outcomes particularly individual experiential interpretations of learning outcomes.

References

Coppola, N.W., Hiltz, S.R.&Rotter, N.G. (2004). Building trust in virtual teams. *IEEE Professional Communication Society*, *47 (2)*. 95-104.

Dohn, N. B. S. (2005). *A comparison of operator trust in humans versus machines*. Paper presented at the 6th International Conference on Networked Learning 650-657 Retrieved July 27 16, 2008, from http://www.networkedlearningconference.org.uk/abstracts/PDFs/Bonderup_Dohn_650-657.pdf

Fishman, B. (1999). Characteristics of students related to computer-mediated communications activity. *Journal of Research on Computing in Education, 32*(1), 73.

Gabriele, P. (2004). Virtual teams: Team control structure, work processes, and team effectiveness. *Information Technology Amp, 17*(4), 359.

Hirsh, S., Sellen, A. & Brokopp, N. (2005). *Why HP people do and don't use videoconferencing systems* No. HPL-2004-140(R.1) HP Laboratories Palo Alto.

Jarvenpaa, S. L., & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organizational Science, 10*(6), 761-815.

Johnson, S., Suriya, C., Won Yoon, S., Berrett, J. & La Fleur, J. (2002). Team development and group processes of virtual learning teams. *Computers & Education, 39*, 379-393.

Kreijns, K., Kirschner, P.A. & Jochems,W. (2003). Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: a review of the research. *Computers in Human Behaviour. 19(3)*:335–353.

Ocker, R. & Yaverbaum, G. (2004). Collaborative Learning Environments: Exploring Student Attitudes and Satisfaction in Face-to-Face and Asynchronous Computer Conferencing Settings. *Journal of Interactive Learning Research, 15(4*), 427-448

Pauleen, D. & Yoong, P. (2002). Facilitating virtual team relationships via internet and conventional communication channels. *Internet Research: Electronic Networking Applications and Policies, 11*(3), 190-202.

Rollett, H. Lux, M, Strohmaier, M, Dosinger, G. & Tochtermann, K. (2007). The Web 2.0 way of learning with technologies. *International Journal of Learning Technology.* 3(1) 87-107.

Wilson, E.V. (2000). Student characteristics and computer-mediated communication. *Computers & Education 34(2)*, 67-76

Authors: Ian Knox, Institute for Professional and Organisational Learning, University of Ballarat- Mt Helen P.O. Box 663, Ballarat VIC 3353. Email:i.knox@ballarat.edu.au
Deirdre Wilmott, Institute for Professional and Organisational Learning, University of Ballarat-Mt Helen P.O. Box 663, Ballarat VIC 3353. Email: d.wilmott@ballarat.edu.au

Please cite as: Knox, I. & Wilmott, D. (2008). Virtual teams: Worlds apart. In *Hello! Where are you in the landscape of educational technology? Proceedings ascilite Melbourne 2008*.
http://www.ascilite.org.au/conferences/melbourne08/procs/knox.pdf